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10/720,634	11/24/2003	Erik Surewaard	81044753	4266
28549	7590	04/03/2006	EXAMINER	
KEVIN G. MIERZWA ARTZ & ARTZ, P.C. 28333 TELEGRAPH ROAD, SUITE 250 SOUTHFIELD, MI 48034			PANG, ROGER L	
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**BEFORE THE BOARD OF PATENT APPEALS
AND INTERFERENCES**

Application Number: 10/720,634
Filing Date: November 24, 2003
Appellant(s): SUREWAARD ET AL.

Jerome R. Drouillard
For Appellant

EXAMINER'S ANSWER

This is in response to the appeal brief filed on February 20, 2006 appealing from the Office action mailed September 27, 2005.

(1) Real Party in Interest

A statement identifying by name the real party in interest is contained in the brief.

(2) Related Appeals and Interferences

The examiner is not aware of any related appeals, interferences, or judicial proceedings which will directly affect or be directly affected by or have a bearing on the Board's decision in the pending appeal.

(3) Status of Claims

The statement of the status of claims contained in the brief is correct.

(4) Status of Amendments After Final

The appellant's statement of the status of amendments after final rejection contained in the brief is correct.

(5) Summary of Claimed Subject Matter

The summary of claimed subject matter contained in the brief is correct.

(6) Grounds of Rejection to be Reviewed on Appeal

The appellant's statement of the grounds of rejection to be reviewed on appeal is correct.

(7) Claims Appendix

The copy of the appealed claims contained in the Appendix to the brief is correct.

(8) Evidence Relied Upon

5070266	Janczak et al.	12-1991
6453864	Downs et al.	9-2002

(9) Grounds of Rejection

The following ground(s) of rejection are applicable to the appealed claims:

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 9-11 are rejected under 35 U.S.C. 103(a) as being unpatentable over Janczak in view of Downs. With regard to claim 9, Janczak teaches a method for shutting down an ICE, comprising: stopping the engine in a predetermined rest position, Col. 1; and locking the engine in said predetermined rest condition via a locking mechanism (Abstract). Janczak lacks the specific teaching of the defined starting position. Downs teaches the method of stopping the engine 12 at a predetermined rest position, said position being defined such that motoring torque is decreasing during the first phase of restart (Col. 4); and locking the engine in the predetermined rest condition via a locking mechanism (via 14). It would have been obvious to one of ordinary skill in the art at the time of the invention to modify Janczak to employ the predetermined rest position in view of Downs in order to reduce compression vibration (Col. 1). With regard to claim 10, Janczak teaches the method wherein the locking mechanism prevents engine rotation. With regard to claim 11, Janczak teaches the method wherein said locking mechanism comprises pins 4 that engage with a gear 15 coupled to the crankshaft.⁸

(10) Response to Argument

With regard to the combination of Janczak and Downs, applicant does not argue the combination, and therefore only the Downs reference will be addressed.

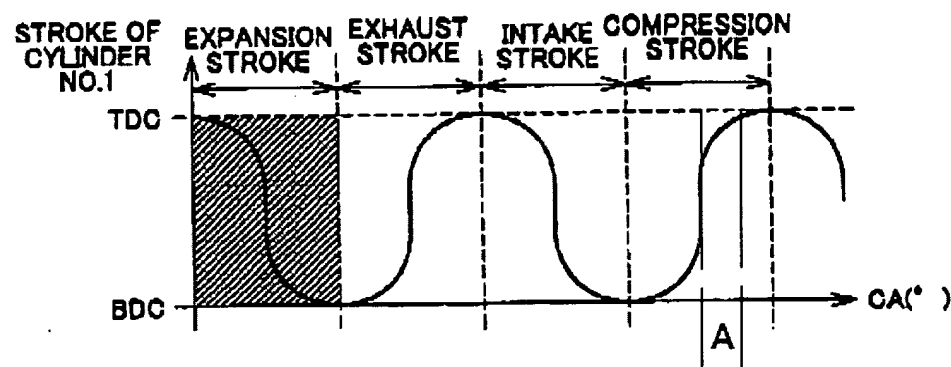
With regard to the Downs reference, applicant makes the following arguments:

- 1) Downs teaches a starting point on either the exhaust stroke or intake stroke, while the present invention is taught to start within the compression stroke.
- 2) Downs does not teach of a reduction in absolute cranking torque.
- 3) Downs only teaches of a rocking back and forth in benefiting less torque needed for cranking.

With regard to Argument 1:

- 1) Downs teaches a starting point on either the exhaust stroke or intake stroke, while the present invention is taught to start within the compression stroke.

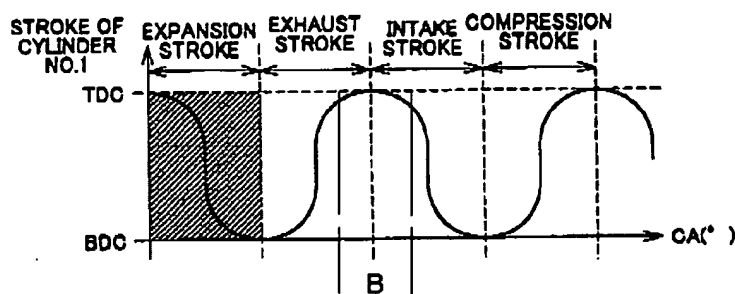
As applicant has stated, there are two Top Dead Center positions during a stroke cycle of an engine cylinder. The present invention discloses a controlled starting position before the end of the compression stroke, as illustrated below in the section labeled "A":



Applicant's starting point.

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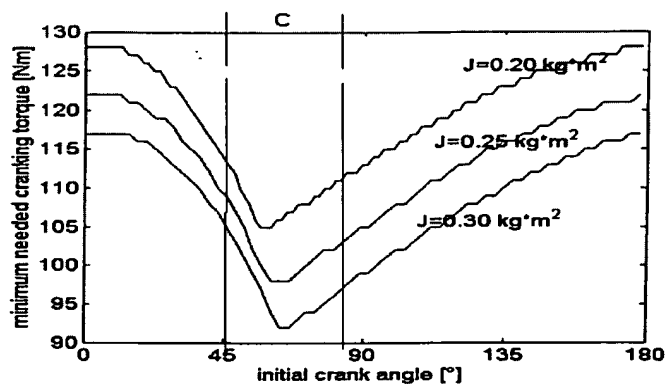
Downs teaches of a starting point located at either the end of the exhaust stroke or the intake stroke, as illustrated below in the section labeled “B”:



Downs' starting point.

Although these are different starting points, the difference in the starting points is irrelevant, as applicant has only claimed the method of “stopping the engine in a predetermined rest position wherein the predetermined rest positions is such that *motoring torque is decreasing* during the first phase of restart.”

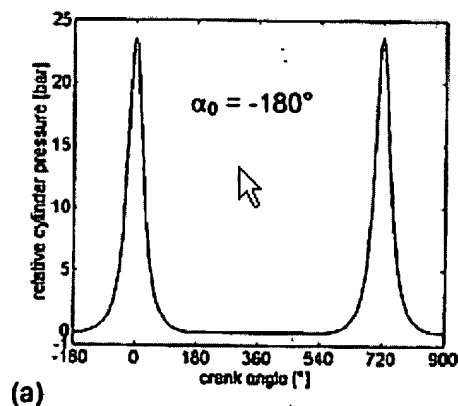
With regard to the present invention, on page 6 of the specification, applicant has defined “motoring torque” as the minimum torque needed for cranking, as illustrated below (wherein applicant's starting point of between 45 degrees and 80 degrees has been labeled “C” (From Fig. 3 of the present application)):



Motoring Torque v. Initial Crank Angle

Given applicant's definition and illustration of a "decreasing motoring torque", the only teaching that is required to fulfill this limitation would be for the engine to be stopped at an initial crank angle that requires less torque to crank the engine than a point in the stroke cycle that would require more or maximum torque (i.e. at the end of the compression stroke) to crank the engine. Downs teaches this initial crank angle.

The torque required to crank the engine during a start phase is related to the relative cylinder pressure of the engine, as illustrated below (from Fig. 4 of the present application):



Cylinder Pressure v. Crank Angle

This initial required starting torque is high because in order to start the engine, the engine (at rest) must overcome both starting friction and cylinder pressure. However, if the engine is started between the end of the exhaust stroke and after the beginning of the intake stroke, as taught by Downs, the engine would only be required to overcome the starting friction, as there would be 0 cylinder pressure. This would thereby require less motoring torque than at other starting points (especially during the compression stroke), and therefore fulfill the "decreasing motoring torque" limitation.

With regard to Argument 2:

2) Downs does not teach of a reduction in absolute cranking torque.

As discussed under Argument 1, although Downs does not provide a chart or graph as applicant has, the starting point of Downs inherently has a low absolute cranking torque (i.e. torque to start the engine from rest). In column 1, lines s 41-46, Downs specifically states the following:

“Another mechanism that can affect the torque required to re-initiate engine start up is the crankshaft angular location during an engine stall. It is favorable to have the crankshaft rest with the intake valve open at the cylinder which is in its intake stroke. “

Downs has disclosed a problem (torque needed to re-initiate an engine startup) and has provided a solution. Although Downs states another benefit of the starting angle (decreased vibration), the solution also addresses the “decreasing motoring torque” problem (as discussed in Argument 1, above).

With regard to Argument 3:

3) Downs only teaches of a rocking back and forth in benefiting less torque needed for cranking.

Although Downs does teach of this method, this is merely a second control means disclosed by Downs. In column 1, Downs discusses a degradation of lubrication film, and corrects this using a “Lubrication Redistribution control (Col. 5).” The only teaching of Downs used within the rejection is the “Pre-Positioning Control (Col. 4).”

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Conclusion:

Applicant has argued the differences between the present application and the downs reference. However, these differences have not been positively claimed. Applicant has broadly claimed a starting position "such that motoring torque is decreasing." Using applicant's interpretation of "motoring torque" and "decreasing," Downs teaches of this starting position and therefore teaches the argued claim limitation.

(11) Related Proceeding(s) Appendix

No decision rendered by a court or the Board is identified by the examiner in the Related Appeals and Interferences section of this examiner's answer.

For the above reasons, it is believed that the rejections should be sustained.

Respectfully submitted,

Roger Pang



Conferees:

Charles Marmor *CM*

Ha Ho

